1:Vaillant A-5 (1928-1936)1941 NU7 Aztec NU7

438 mala the people travel miles to exchange their produce; and
443 so important is the market as a social function that a merchant will not dispose of his produce except at that place, even though offered payment far in excess of its market value.*

437 Barter was the only means of exchange, and value was
436 established by desirability and rarity. Money, an exchange medium of fixed value, did not exist. However, something had to be found which would balance an inequality of exchange by being not too valuable to use in adjusting small transactions and at the same time universally wanted. The cacao bean answered this requirement and was easily portable as well. The Aztecs were extremely fond of chocolate (the word itself is of Aztec derivation), so that beans were gladly converted into the national luxury drink. Quills of gold dust sometimes were used as an exchange medium, as were crescent-shaped knives of thin-beaten copper. These last had not the common acceptance or the utility of cacao beans, although they represented easily portable value.*

317 The most precious substance among the Aztecs was jade,
435 or stones resembling it in texture and color. Both jadeite and nephrite occur in the New World, and the American variety is distinguishable from the Asiatic stone. Uncut stones are seldom seen today, for there is no lapidaries' market in modern Middle America or the United States, whereas jade is still extensively worked in China, so that men find it worth their while to search rivers in Burma for boulders of this rare substance. (See Plate 3.)

435 The testimony of the Conquistador Bernal Diaz is conclusive on this point of value. During the night when Cortes retreated from Mexico the leader, after taking off his share of treasure, turned the surplus over to his troops. Many,

1:Vaillant A-5 (1928-1936)1941 NU7 Aztec NU7

249 The maguey plant, or agave, was important to household economy for its sap, which was fermented to make a kind of [273] beer. Not only was this pulque used both as a tipple and a ceremonial intoxicant, but it had an important nutritive effect as well in counterbalancing the lack of greens in the [283] Mexican diet. The plant itself had many other uses. Its fibers could be twisted into twine or rope and woven into containers or even clothing. The thorns were excellent needles [412] and had a more lugubrious use as instruments for mortifying the flesh in religious penances. The leaves as a whole sometimes [342] were employed in constructing shelters or roofing huts. Small wonder that the maguey and the corn plants were symbolized as goddesses and worshiped accordingly.

[248] The Aztecs cultivated cotton in many varieties. Tobacco [276] they smoked for the most part in hollow reeds as a sort of cigarette. Late in their history they also used elbow-shaped 249 pipes, probably for some ceremonial purpose, much as our [314] modern Pueblos restrict pipe smoking to rain-inducing rituals. They consumed quantities of copal gum as incense during religious ceremonies and obtained rubber from Vera Cruz and the south, as well as from the dwarf guayule plant found in northern Mexico. The Aztecs, like us, found this [526] material indispensable to their culture, for balls in their ceremonial game, *tlachtli*, and as a gum to fix feathers and other [317] adornments to costumes. Bitumen, which came from the oil seepages in Vera Cruz, had its function as an adhesive and as a body paint. In western Mexico the Indians prepared a [237] serviceable lacquer which they used to coat gourds and wooden trays. This incomplete list of plants and substances cultivated and exploited by the Aztecs and their neighbors gives an idea of our deep indebtedness to these past civiliza-

1:Vaillant A-5 (1928-1936)1941 NU7 Aztec NU7

duce the kernels of corn to flour. Stone tools still persisted for cutting and grinding, and cold, beaten copper was beginning to find favor as a material for needles, axes and ornaments. The volcanic glass, obsidian, because of its sharp edges and its abundance, was as satisfactory as most of their edged metal tools. The simple loom and the weighted spindle were sufficient equipment for the weavers, and pottery had a variety of uses in the storage and service of food. The bow, throwing stick, lance and club were the chief weapons. By and large, mechanical inventiveness was not conspicuous in Aztec culture, although craftsmanship, through the superior use of simple tools, was developed to a high degree, as we shall show in the next chapter. (See Plates 35, bottom right; 37, top left.)

The great cities of the Aztecs had their origin in the simple villages of sedentary tribesmen. Just as in their social organization and economy, there was a simple base, comparable to the settlements of some of our sedentary North American tribes. The houses on the outlying *chinampas* represented the primitive state of Aztec housing. These were huts with thatched roofs resting on walls of wattles smeared with mud, a type of shelter probably in use in Middle Culture times and persisting two thousand years later in the Indian villages of present-day Mexico. (See Plate 42.)

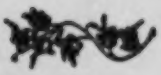
More imposing establishments graced the older portions of the city, where generations of successive residents had brought care, renovation and innovation to domestic architecture. Each house rested on a raised platform faced with stone, which gave some protection against floods. Rooms for social purposes, sleeping, cooking, storage and quartering slaves were arranged in a rectangular plan about a central

1:Vaillant A-5 (1928-1936)1941 NU7 Aztec NU7

317 439 324 Obsidian must have had important economic value for the Valley peoples, and since volcanic glass is portable and very useful for its sharp cutting edge, it was widely traded to the tribes of nonvolcanic regions. Techniques were established early in the Middle Culture, and the art of polishing this stone was known to the Teotihuacan Toltecs, who utilized it as eyes for the idols of the Temple of Quetzalcoatl. Ceremonial [788] bloodletting called for a constant supply of thin blades (made by pressure flaking), some of which are exquisitely long and narrow. Yet scalpels of comparable fineness were made in Toltec and Mazapan times as well. Indeed, the principal [415] innovation of the Aztecs was in fashioning vases from obsidian, a formidable task, owing to its hardness.[a]

303 789 The making of mirrors called much ingenuity into play. They are so rare that they must have been used solely for ritualistic magic. Blocks of obsidian were sometimes polished to produce an eerie and mysterious reflection. However, iron pyrites, burnished and shaped, were more common; and rarer examples had thin pyrite flakes laid in a mosaic and glued to a background of wood or shell. In another technique used on the coast the artisan detached a surface of pyrites in its matrix of slate, burnishing one side and carving the other to fashion a mirror with a carved back. One [395] example, at least, is known of a mirror of marcasite with its surface so ground as to produce a magnified reflection.[a]

324 Stone sculpture we shall consider more conveniently under art, but the mass production of dressed stone for building must have required patience and skill to accomplish. Stoneworking throughout Middle America was achieved without metal tools. Flaking and chipping for the hard stones, pecking and hammering for the softer ones, were the preliminary



1796 Twenty-sixth Chapter in which are related the feast and ceremonies celebrated upon the feast in the seventh month, which was named Tecuilhuitontli.[1]

Tecuilhuitontli: When this feast arrived, they celebrated the minor feast of the lords for twenty days. And at this time died—[for thus] her fate then befell her—at this time died [in sacrifice], a war captive's death, [she who was the likeness of] Uixtociuatl, god[dess] of those who made salt, the salt-makers.

1796 776 317 This Uixtociuatl, so it was said, was thought to be the elder sister of the rain gods. And it was thought that the rain gods were her brothers. [In] one thing she angered and offended them, that she mocked at her brothers. And then they pursued their elder sister over to the salt beds. There she discovered salt—how it existed, how it was formed, and how were made the salt jars; and also salty sand.

And, on this account, greatly did men who lived where there was salt pay honor to her.

1796 [303] 301 And the array of [the likeness of] Uixtociuatl was [thus]: Her [face] paint and ornamentation were yellow. This was of yellow ochre or the [yellow] of maize blossoms.[2] And [she wore] her paper cap with quetzal feathers in the form of a tassel of maize. It was of many quetzal feathers, full of quetzal feathers, so that it was covered with green, streaming down, glistening like precious green feathers.

And [she had] her golden ear plugs. And the golden ear plugs glittered and flashed and were very yellow, like squash blossoms. And her shirt was embroidered[3] to resemble water [waves].[4] And the border of her shirt was as if painted with green stones, designed to represent billowing clouds on the hem [of her shirt]; the edge was painted in a cloud design. And her skirt was designed in the same fashion.

And on her ankles[5] she had placed bells—golden bells—or rattles. On the calf of her leg she had bound an ocelot skin on which were the bells. And when

Jnic cẽpoualli on chiquace capitula, vncan motenehoa yn ilhuitl, yoan in tlamauiztililiztli, in muchioaia, yn ipan vel ic cemilhujtl, ic chicome metztli, in mjtoaia: Tecujlhujtontli.

Tecujlhujtontli: yn in quiçaia in muchioaia, in tecuilhujtontli, no cempoalilhujtica: auh vncã mjquja, vncan itequjuh vetzia vncan trumjquja in vixtocioatl, yn jnteouh iztatlaca, iztachiuhque.

Jnjn vixtocioatl, iuh mjtoa qujlmach inveltiuh, catca in tlaloque: yoan qujlmach yioq'chtioan in tlaloque: centlamãtli ic quinqualanj, ic quinniollitlaco, inca mocaiauh, yn joquichtioan: auh njman ic quitotocaque yn jnveltiuh vmpa yn iztapan: vmpa quinextito yn iztatl, yn juh ioli, yn juh tlacati, yn juh muchioa iztacomjtl, yoan iztaxalli.

Auh ipampa y, cenca qujmauiztiliaia yn iztapaneca, yn iztapãtlaca.

Auh in vixtocioatl, yn jnechichioal catca, yn jxaoal, yn jnechioal cuztic: ichoatl in tecoçaujtl anoço tomjoli: yoan yamacal, quetzalmjiaoaio, quequetzaio, moca quetzalli, iuhqujn xoxoqujuj, xoxoqujuhtimanj, momoiaoa, xexeliuj, iuhqujn xoxopaleoa, xoxoxouja:

yoan yteucujtlanacoch, teucujtlanacoche: auh in teucujtlanacochtli, pepetlaca, pepepetlaca, cenca coztic, iuhqujn aioxochqujlitl: yoan yujpil tlaaicujlolli, aycujliuhquj: auh yn iten yn ivipil, tlachalchiujcujlolli, chalchiujcujliuhquj, tẽmixmolonqui, tlatenmjxicujlolli: auh yn icue çan ie no iuhquj ynic tlacujlolli,

yoan icxic contlalia coiolli, teucujtlacoiolli, anoço tzitzilli: itlanitzco in qujlpiaia, ocelueoatl yn ipan

1. *"Vicesimilla de los setenta,"* according to Garibay ("Relación breve," p. 300); *"der kleine Herrenfest,"* or *"kleines Herrenfest,"* in Seler (*Einige Kapitel*, pp. 130, 131).
Tezozomoc describes this month and the feast known by the lords' number, in contrast to Tezcatlipoca. Cf. Kohler and Olmos, *op. cit.*, p. 26.
2. In *op. cit.*, p. 131 and p. 131, n. 1, Seler refers to *"polvo Pflanzenfarbe."* Mimoso, however, is translated by Molina (*op. cit.*) as *"la espiga o la flor de la caña de maiz."*
3. Literally, painted; Sahagún, however, writes *"labrado."*
4. Cf. Sahagún's corresponding Spanish text: also Plate 24.
5. *"Las corpezuelas de los pies,"* in Sahagún's Spanish. Cf. also Anderson and Dibble, *op. cit.*, p. 1, n. 9.

richly adorned, with much gold, covered with gold, and with many quetzal feathers, covered with quetzal feathers.

And when they had been given these devices, then they went to perform the hand-waving dance. Moctezuma led it, wonderful [to look upon] as he moved. Before all they displayed the arms and insignia, glistening far like the sun's rays, glittering greatly—these devices.

And after this, when it had ceased, when the sun was near setting, then came forth [the priests of] Chicome coatl,[15] representatives of those wearing the skins of flayed sacrificial victims who, when [the likeness of] Toci died, also died at the same time.

Then these issued from their temples, to strew seeds [of maize] here at the banquet table of the devil [Uitzilopochtli, which is a pyramid] not very high.[16] And when they had climbed up [the pyramid], then they flung, sowed, and scattered the seed among the onlookers—white maize grains, yellow, black, red;[17] and squash seeds. All scrambled for them, as if stealing or snatching them, and in truth fought over them.

And the maidens who belonged among [the priests of] Chicome coatl were known as priestesses. They bore upon their backs the ears of dried maize, seven ears each, striped, painted well with liquid rubber, well girt in paper and wrapped in costly capes. And the priestesses who carried them upon their backs had their faces painted and [their arms and legs] pasted with feathers. And also they proceeded singing as they went; the priests of Chicome coatl intoned the chant for them.

And when this was done, when they had scattered the seed, thereupon [the priests] went back whence they had come. Then were brought down the [white] chalk and [white] feathers, which lay in a wooden vessel, from above, [in the Temple of] Uitzilopochtli. And he who brought down the chalk was the first priest. When he had come down to reach the base of the pyramid, then he placed it there on the landing.[18]

And when he had placed it, then set forth the chiefs, running hard and fast. In truth then were beheld the fast and light runners. He who came first quickly took for himself a handful of feathers. Then

tlanquj in tlauiztli, cenca teucejoloio, mocentecujcla cenca quetzallo, moca quetzalli.

Auh yn oc[illegible]momacaque, njman ie ic uj momatlaçaque, quijacana in Motecuçoma, cenca mauiçotiuj: teixpan quincetia in tlauiztli, cenca veca in motonameioia, cenca mihiiotia in tlauiztli.

Auh in ie iuhquj, yn onecacaoaloc in jquac ie teuilac, mec oalquiça in chichicomecoa, in jmjxiptlaoan no tototeti: in jquac mjquj toci, no iquac mjqui.

Mex oalquiça in intetzupan, oalxinachpinoa: vncan in jtlaquaian diablo, amo cenca vecapan. Auh in otlecoque: njman ic qujoalchachaioca, qujoalteçpeoa, qujoalcecenmana tepan, in xinachtli: intzc tlaolli, cozticc tlaolli, iaviti, xiuhtoctli, yoã xiouachtli, iuhqujn namoialo, iuhqujn n[illegible]omotzolo, netlapepenjlo, vel ipan nemjmjctilo.

Auh in jchpopochti in intech povi chichicomecoa: motenteoa, cioatlamacanque: qujmonamaltiaia in cintli, chichicoomolotl, oltica qujxxaoaoaia in cintli, yoan amatica in qujequjxpujmjloaia, yoã tlaqotilmatica in qujnnama in cioatlamacanque, monaoaia, mopotonjaia, no cujcativi, qujncujcatitivi in chichicomecoa.

Auh in ie iuhquj, in onxinachpinoa njman ie ic vi in motlatinque: njmã ie ic oalteno in tiçatl yoã hivitl, quauhxicaltica manj, in jcpac vitzilobuchtli: auh in qujoalteuovia tiçatl, tlenamacac: in ocxitico tlatzintlan, mec qujmana in vncã Coatzalpan.

Auh in oqujman: njman ic ena in tiacaoan, cẽca motlaloa, cenca totoca, vel vncan neci in painanj in tlaçani: in aquin iacattiuh, qujmeztoloticquiça in jvitl: njman ic molonj, njmã ie ic ipan onnecepenalo

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15. "Los antepas, de la diosa chicomecoatl" (corresponding Spanish text).
16. "Entre se subian, creyendo en ese pequeño, que es llamamos [sic] la casa de chichihuacalli" (loc. cit.). Codex Barbonicus, mounds of Ochpaniztli, illustrations 11. Peso y Troncoso, op. cit., p. 148.
17. Xinchoctlolli, in flavous (op. cit.) is defined as crude vinage. See, however, n. 12, p. 62.
18. "Pusiendo abaxo, en ese lugar que se llamava cuauhtli, que era en esquero, que sale enzes los grados del en, y el pasio abaxo, al qual espacio subia por ellos, o sayi, grados" (corresponding Spanish text).

643 **Ninth Chapter, in which is told that with which the rulers were arrayed when they danced.**

Injc chicuacuj capítulo vncan motenecoa injn nechchioaia in tlatoque in jcoac macoaia.

301 [237] The [head] band with [two] quetzal feather[1] tassels set off with gold, with which they bound their hair;

Quetzallalpilonj, coztic teocujtlaio injc qujlpiaia, intzon

A quetzal feather crest device set off with gold, which he bore upon his back;

quetzalpatzactli, coztic teocujtlaio in qujmama

[237] A finely wrought headdress of red spoonbill[2] feathers, with flaring quetzal feathers, and with it a drum [covered] with gold—a device which he bore upon his back as he danced;

tlauhquetzoltzontli tlaçotlanquj, quetzalli icuecuetlacacaio, injcal ueuetl coztic teocujtlaio, in tlaujztli in qujmama mjtotia.

A golden arm band;[3]

teucujtlamatemecatl, coztic

Golden ear plugs, which he inserted [in the lobes of his ears];

teocujtlanacochtli coztic in caquja

[281] A wrist band of cured leather, on which was a large, round, green stone or a fine turquoise which [314] he placed on his wrist; [it was] treated with Peru balsam, so that it gleamed;

matzopetztli in cuetlaxtli, vej chalchiujtl ololiuhquj, anoço vej teuxiujtl ipan ca in jmaquechtlan qujlalia ujtzilonitica injc tlachiuhtli injc tlapetzolli

A green stone lip plug set in gold;

chalchiuhtenteti coztic teocujtlatica callo,

[237] A long, white labret of clear crystal, shot through with blue cotinga[4] feathers, in a gold setting, which he inserted in his [lower] lip;

iztac teçacatl, xiuhtotoxica tlamjotli, iztac teujlotl in jntenco caquja, coztic teucujtlatl in jcallo.

● [317] A long, yellow labret of amber in a gold setting;

Coztic teçacatl, in apoçonalli teucujtlatica tlacallotilli,

643 301 532 A long, curved, green stone labret, fitted at the base in a gold setting;

chalchiuhteçacanecujlli, coztic teucujtlatl ic tlatzincallotilli,

A gold lip pendant;

teucujtlatempilolli coztic

A gold lip pendant in the form of a pelican;[5]

atototempilolli coztic teucujtlatl,

A gold lip pendant in the form of an eagle;[6]

quauhtempilolli coztic teucujtlatl,

A gold lip pendant in the form of a fire serpent;

xiuhcoatempilolli coztic teucujtlatl,

A gold lip pendant in the form of a bowling pole;

aujctempilolli coztic teucujtlatl,

A disc-shaped lip plug of fine turquoise in a gold setting;[7]

temalacatenteti teuxiujtl coztic teucujtlatl icallo,

A curved, green stone lip plug in a gold setting;

chalchiuhtencololli, coztic teucujtlatl icallo,

A green stone lip plug in the form of an eagle, fitted at the base in a gold setting;

chalchiuhquauhtenteti, coztic teucujtlatl itzincallo,

1. Cline, *op. cit.*, II, p. 112, identifies quetzal as *Pharomacrus mocinno mocinno*.
2. *Platalea ajaja* L. (Seler, *op. cit.*, p. 124).
3. One such is described more fully in Anderson and Dibble, *op. cit.*, II, p. 67.
4. Cline, *op. cit.*, p. 134, identifies blue cotinga as *Cotinga amabilis*.
5. Cf. Seler, *op. cit.*, p. 102.
6. *Quauhtecuani*: quauh could mean warrior; elsewhere we always give *águilenses* to the rendering *aquila*.
7. After this phrase, the Real Academia de la Historia MS has *chalchiuhtencololli coztic teucujtlatl quillo-a* large, circular lip plug of green stone in a gold setting."

443 643 656 262

and other water birds,[4] gulls,[5] and wild geese;[6] maguey syrup and honey; hot chilis, chili from Atzitzinacan, small chilis,[7] chili powder, yellow chili, chili from the Cozuxca, sharp-pointed red chilis, long chilis, smoked chilis; small, wild tomatoes,[8] and ordinary tomatoes.

And separately were sold every kind of fruit: the American cherry, avocados, plums, guavas, sweet potatoes, manihot,[9] sapotas,[10] anonas,[11] yellow sapotas, sapotillas,[12] *tejocotes*,[13] tuna cactus, mesquite beans, marchpane, *cacomites*,[14] *cimate* roots,[15] squash cut in pieces, chayote,[16] squash seeds, *Cassia* seeds;[17] and white fish, frogs, and water dogs; water fly eggs, water flies, lake scum, and red shellfish; and white paper made of the bark of trees, and incense, and rubber, and lime, and obsidian; and firewood, and poles, logs, planks, and chips of wood; digging sticks, pointed oaken poles, hatchets, paddles, staves; maguey roots,[18] maguey fiber, and cured leather, and sandals; and copper axes, copper needles, and carpenters' and sculptors' copper chisels; and all manner of edible herbs—onions, water plant leaves, thistles,[19] amaranth greens and heads,[19a] purslane, mixed greens, varieties of sorrel;[20] tuna cactus fruit, sweet and acid; squash greens, tender young squash, squash blossoms, and squash roots.

[314] [317] 412 [413]

tlalalacatl. Necuetzaoac, quauhnecutli, tonalchilli, atzitzioacaiotl chilli, chiltecpin, texiochilli, chilcoztli, coujxcaiotl chillj, mjlchilli, viiac chilli, pochoac chilli, mjltomatl, xitomatl:

ioan nonqua monamaca, in jxquitlamantli xochiquilli. Capoli, aoacatl, maçazocotl, xaxocotl, camotli, quauhcamotli, teçontzapotl, eciotzapotl, atzapotl, tzapotl, texocotl, nochtli, mjaquijtl, itlaaquijllo, chiancaca, cacomjtl, çimatl, aiotlatlapantli, chaiotli, aiocuechtli, quauhaiocuechtli, ioan iztac mjchin, cujatl, axolotl, aoauhtli, axaxaiacatl, tecujtlatl, izcauitli, ioan iztac quauhamatl, ioã copalli, ioan olli, ioan tenextli, ioan itztli, ioan tlatlatiliquauujtl, ioan quaoacatl, quammjmjlli, vapalli, tlaxamanjlli, victli, vitzoctli, tlatecoaj, aujctli, matlaquaujtl, menelhoatl, ichtli, ioan cuetlaxtli, ioan cactli, ioan tepoztli, quauhxelolonj, ioan tepozcoiolomjtl, ioan tepoztli tlacujcujoaloaj, ioan tepoztlaquauhicujlolonj, ioan in ixquich tlamãdi quijlitl quaioaj, xonacatl, tzaianalquijlid, vitzquijtl, ouuhquijlitl. ouuhtzontli, itzmjquijlitl, quillanenel, iztac xoxocoioli, xoxocoiohujujlan, nopalli, xococuechtli, axoxoco, aioiacaquijlitl, aionamacatl, aiozochquijlitl, eçoquijlitl, exotl, elotl, xilotl, ocotl, mjiauatamalli,

4. *Atzitzicuilol*: "son redondillas, tienen los pollos largos, y agudos y negros: tienen los pies largos: son crueleeee

726 balls. Thereupon they shot iron bolts; but only one was pierced, in the forehead, wherefore he then died. Castañeda was the one who shot the arrow. And the chieftains moved in against him and they drove [the Spaniards] into the water, stoning them. And Castañeda there would have perished, but he clung to the boat and thus they carried him to Xocotitlan.

[349] And one boat lay at Tetenanteputzco, where the walls curve.[7] And another boat lay there at Totecco,[8] [491] where the road goes direct to Tepetzinco.[9] It only lay on guard in the water, and at nightfall they took it [away].

And some days thereafter the Spaniards once again resolved [to war upon] us.[10] Then they came, [443] and chose the Quauecatitlan[11] road which led direct ●317 to the salt market. But there on the Quauecatitlan road, they could not spread out. So all those of Tlaxcalla, Acolhuacan, and Chalco thereupon filled in the canals.[12] And on the road where they could not spread out, they cast adobes and roof beams; door lintels, pillars, and round logs were set in; they threw bundles of reeds into the water. And when it was filled in, then the Spaniards, disposed [in battle order], very slowly proceeded: a cotton banner led them; they went blowing trumpets and beating drums. And behind them went in position all the Tlaxcallans, and indeed all those of [other allied] cities. [533] Those of Tlaxcalla became very brave; they shook their heads, beat their chests, and sang. The Mexicans also sang. There was chanting on both sides. They intoned whatsoever they remembered. Thus they were able to animate themselves.

And as they reached Tlalhuacan,[13] all the chieftains were crouched; they stretched themselves out very flat, and were well hidden. They hid their

ça ce inmjnoc ixquac, njman ic momjqujli: ichoatl in valtemj in castañeda. Auh in tiacaol itech ietiqujxque, atlan qujnnemjtique, qujntetepachoque: auh vncā mjqujzquja in castañeda: auh ça acaltitech pilcatia injc quivicaque xocotitlan.

Auh centetl acalli onoca tetenanteputzco, vncā in colivi tetenamjtl: auh in oc centetl acalli vmpa onoca in totecco: in jpan vtli tlamelaoa Tepetzinco, çan tlatlapixtoca in atlan. Auh in ic ioa quivica.

Auh iquezquilhujoc ie no ceppa techcentlatalhuj in Españoles: nec vitze, ie quioalmottilique in quavecatitlan vtli, in oallamelauhticac iztanamacoian. Auh in vncan in quauecatitlan in vtli ca moiauhque. Auh in jxquich tlaxcaltecatl, in aculhoacatl, in chalcatl: njman ie ic catzupa in acalutli: yoan in oca moiauhque vtli: contlaça in xamjtl, yoan in calquavitl, in tecoc in tlaixquatl in tlaquetzalli, in quāmjmjlli, in acatl quicujtlalpia in contepeoa atlan. Auh in jquac in omotzop nec valmotema in Españoles, cencā ivian in iativitze, quiniacana in quachpanjtl, tlapixtivitze, tlatzotzontivitze. Auh imjcampa onotivitze in ie izquich tlaxcaltecatl, yoan in ie izquich altepeoa, cenca muchicava moquaquacuecuechoa, mecitzotziona in tlaxcalteca, cuica, no cuica in mexica necoccampa cuico, queoa in çaço tlein quilnamjquj, ic mellaquaoa muchioa.

Auh in cacico tlalhoacan in tiacaol vel nepachoio, vel mopachoa vel netlatilo, quitetetzontlaliaia, quichixtoque in quemman teevitilo, in quemman quj-

7. Corresponding Spanish text: *"cerca de aquella yglesia que se llama cabra basia."* Cano (*op. cit.*) places it in la Garita de Peralvillo, barrio of Tolpetlalolican.

8. *"Cerca de la Cava, pidio almenrdiz."* — Cano, *op. cit.*

9. El Peñón de los Baños — east of the corner of Tezcatzinco, in the lake. However, Icazbalceta and Barlow, *op. cit.*, p. 46 and map, locate it as a hill in the southeastern part of Tlatelolco.

10. Corresponding Spanish text: *"determinaronse entre si los españoles de darnos guerra por ella."*

11. Quauhcatitlan acapotli — *"calle que iba derecho de Norueste al Mercado de la Sal. . . . prolongada hasta encontrar el Albarradón y probablemente correspondia con la Calzada de Nonoalco, Mercado, Almacenes, Carretjal y Hornos."* — Cano, *op. cit.* Icazbalceta and Barlow, *op. cit.*, show it in their map as in the northeast part of the city.

12. In Bustamante, *loc. cit.*, the version is somewhat different from what appears in either the Spanish or Nahuatl text of the *Florentine Codex*: *"por causa de los españoles que los indios habian vencido en su presencia, tornaron á proponer guerra de nuevo, haciendo juramento solemne que la guerra no habia de cesar hasta que acabasen la muerte de sus hermanos los españoles, y no quedase hombre dellos que no matasen en sus manos: de alli adelante acometieron á cegar todas las acequias y caminos de cauoas por donde pudiesen entrar los suyos donde los bergantines no podian entrar, y asi cometieron á derrocar casas, y allanar todas las acequias."*

13. Corresponding Spanish text: *"en barrio que se llama Tlilmatan que es aquesa cabeça"* (San Martin).

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had a small town subject to it which was called Iztapa. This guarded a salt mine, well-fortified, from the Tarascans.[a] Nevertheless, there is no salt from this province in the tribute list.

Oztoma itself held the great border fortress of the region, built after the arrival of the Mexicans, to serve as a protection from the people of Michoacan.[b] The remains of this fort have recently been investigated and described.[c] [712]

Oztoma figures in the *Mendocino* (folio 18') as one of the garrison towns, under two nameless governors, a "tlacochtectli" and a "tlacatecatl"; and Bernal Díaz refers to Oztuma when, speaking of the garrisons, he cites "... otra capitania En lo de mechuacan ..." (*Historia verdadera de la conquista de la Nueva España* [1904], 1: 302; see fuller quotation of this passage in note 1 under Çitlaltepec and Tlatelolco Province, p. 128).

Totoltepec was another frontier town, which, besides sustaining a local Mexican garrison, had to send aid to Oztoma.[d] [712]

Cueçalan, in turn, was actively at war with Apaztla (a) when the Spaniards came.[e]

Tetela lay west again, and fought against the Michoaque and the Cuitlatec of Axochitlan.[f]

Otlatlan had not been in Mexican hands long enough for quarrels with certain of its fellow subjects to have been erased—quarrels originating, perhaps, when parts of the province were subdued and other parts were still resisting.[g] Nothing is said of the war with Michoacan [648]

[a] *PNE*, 6: 105. Iztapa is also listed in *PNE*, 1: No. 7. This is not, of course, the famous and redundantly named Iztapan de la Sal of the State of Mexico.

[b] A group of Mexican warriors came "con mandato que ... biesen y myrasen a donde podian poblar y açer vn fuerte, de manera questiviese zenie en el de guarnyçion contra los de Mechoacan, el qual ... hizieron, y tan fuerte, que para ellos se tenya por [in]espunable ... era la mas prencipal fuerça que los mexicanos tenyan en todas las fronteras de Mechoacan" (*PNE*, 6: 110). Moedano Kerr, "Estudio general sobre la situación de la fortaleza de Oztuma," *Vigesimosexpsimo Congreso Internacional de Americanistas, actas de la primera sesión, celebrada en la ciudad de México en 1939* (1942), 1: 557–563; and Armillas, "Oztuma, Gro.," *RMEA* (1944), 6: 165–174.

[c] By Hendrichs, "¿Es el Arco de Oztuma de construcción Azteca?" *El México Antiguo* (1940), 5: 142–147, and Lister, *op. cit.*

[d] "Estavan en frontera con los de Mechoacan y sustentaban los soldados que alli tenian, mexicanos, y en el fuerte de Oztuma" (*PNE*, 6: 149). "Trayan guerra con los de Mechoacán y Ajuchytlan" (*PNE*, 6: 150).

[e] "Estando en la guerra de Apaztla, llegó el Marques del Balle a México" (*PNE*, 6: 141).

[f] "Trayan guerra con los de Mechoacan y Axuchitlan" (*PNE*, 6: 134).

[g] "Trayan guerra con los yndios de Tlacotepeque y Tetela" (*PNE*, 6: 139).

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635 *Regional names.*—Atitlaquia and Apaxco lay in the margin of the ancient Teotlalpan, on which we have commented elsewhere.[*]

TRIBUTE

651 *Tribute of the whole province.*—This obliterated province gave the following items of tribute:

CLOTHING

[291 714] 400 bundles of rich mantles[**]
400 bundles of mantles with black-and-white border[**]
800 bundles of large mantles of "twisted" cloth[**]
62 warriors' costumes, together with shields[*]

FOOD

[262] 4 wooden bins (1 each of maize, beans, huauhtli, and chian)[*]

OTHER GOODS

[317] 400 loads of lime[**]

651 632 *Tribute of the component towns.*—Atotonilco de Pedraza itself seems to have figured in the lime manufacture noted above.[*]

317 Otlazpan, in 1549, paid tribute of lime, "mantas labradas con tochomitl," and many other articles, as we see in the *Codex Mariano Jiménez*. These must be the "mantillas de ricas labores ... ropa que bestian los S[eñore]s y caciques." *Tochomitl* is defined in the "Relaciones históricas estadísticas" (1: 228) as "lana teñida de colores la qual dicha lana era conejos y liebres." (Compare with Tepechpa, p. 72.)

10. Quauhtitlan

SOURCES OF THE MAP

635 114 Page 6 of the *Matricula* represents the once great province of Quauhtitlan, whose annals are so precious to the investigator of ancient Mexican history and ethnology. This page is copied as folio 26' of the *Codex Mendocino*. The province lay in the modern State of Mexico, north [128] of the Federal District. Seven towns are listed in this province, the present map of which is based on that of the Secretaría de Agricultura

[*] Barlow, "Las provincias septentrionales del Imperio de los Mexicanos," in *Tercera Reunión de Mesa Redonda sobre Problemas Antropológicos de México y Centro América, ... 1943: El Norte de México y el sur de Estados Unidos* (1944), pp. 119–121.

[**] *PNE*, 1: No. 1 [*ca.* 1550]: "Ay muchos magueyes y tunas y piedra para hazer cal y destas cosas tienen mucha grangeria los yndios." The whole region was abundant in lime.

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NATURE OF THE PROVINCE

Inhabitants and languages.—The Mendizabal-Jiménez Moreno linguistic map indicates great linguistic complexity for this province: Náhuatl, Mixtec, Tlapanec, and Matlame.

Olinalan, celebrated for its lacquer-work, probably carried on that activity in pre-Hispanic times. From adjacent Tlalcoçauhtitlan Province, perhaps only a few kilometers away, "bateas" went as tribute to Texcoco.[a]

Provincial borders in 1519.—Because half the towns of the province cannot be identified on the maps of unexplored Guerrero, the north of this province is a great blank. It bordered, probably, on Huaxtepec Province in that direction, as on the west with Tlalcoçauhtitlan, on the east with Yoaltepec, and on the south with Tlapan, all of them fellow tributaries.

Regional names.—Somewhere in the dubious northeast began the region known as Totollan.[a]

TRIBUTE

Tribute of the whole province.—Quiauhteopan was a rich mining region, as is shown by the following list of its tribute to the highlands:

CLOTHING

400 large mantles**
1 warrior's costume with shield*

FOOD

100 jars of bee honey*

OTHER GOODS

40 large copper bells**
80 copper axeheads**
1 dish of little turquoises*

Tribute of the component towns.—Olinalan, in the mid-sixteenth century, rendered a sizable quarterly tribute of base gold, cacao, money resulting from the sale of cacao, and sixty little jars of honey (over

[a] See the section on Tlalcoçauhtitlan, above.

[b] *PNE*, 5: 57: "Piaztla ... está en la provincia de los Totoltecas de lengua mexicana diferente de los de la Misteca sujetos a la dotrina de la cabecera de Acatlan." Of the same town, it is said farther on (5: 77): "En este pueblo se habla la lengua mexicana corruta, porque es de la provincia de Totola."

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632 *Teoçiocan* is called "Teocinyocan" by another native source.[28] It is perhaps an estancia of Zongolica (a), "en tierra fria," called San Juan de Teoyxuacan, two leagues from the cabecera.[29]

NATURE OF THE PROVINCE

175 197 *Inhabitants and languages.*—Cuetlaxtlan, we are told by a Texcocan chronicler, was conquered by that power,[30] a statement confirmed by the "Relación de Cempoalla."[31] The pre-Hispanic language was Náhuatl.

635 131 *Provincial borders in 1519.*—Cuetlaxtlan lay between Quauhtochco and Tochtepec, which were on the northwest and on the southeast respectively. Northeastward was the sea, and to the southwest was a doubtful region embracing at least one free city-state of the Mazateca.

TRIBUTE

651 *Tribute of the whole province.*—The tribute of Cuetlaxtlan, in contrast with that of adjacent Quauhtochco, was variegated:

[291]

CLOTHING

400 women's blouses and skirts**
400 small mantles, borders black and white**
400 half-quilted mantles**
400 mantles of 4 brazas each**
400 large white mantles, 4 brazas each**
160 very rich mantles for lords and caciques**
1,200 black-and-white striped mantles**
[714] 2 warriors' costumes with shields*
[317] 1 string of chalchiuites*
[237] 400 bunches of quetzal feathers*
[301] 2 lip plugs of crystal, with blue and gold mountings*
20 lip plugs, light amber, mounted in gold*
1 hair adornment of quetzal feathers*

[262]

FOOD

200 loads of cacao*

Cuetlaxtlan paid cacao and cotton mantles, both white and decorated.[32]

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[28] Sahagún, *Historia general de las cosas de Nueva España* (1938), IV: 134.
[29] *PNE*, 5: 230.
[30] Ixtlilxochitl, *Obras históricas* (1892), I: 320 and II: 196.
[31] RHE, 11: 131.
[32] *PNE*, 5: 9: "tributavanle cacao y mantas de algodón blancas e pintadas."

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REMARKS ON TOWNS

632 712 *Xoconochco* has now become Soconusco San Benito.[a] It appears as one of the garrison towns (*Mendocino*, fol. 18') with two governors, named "2. Quauhtli Tezcacouacatl" and "Atzin Tlilancalqui," according to their glyphs (cf. chap. viii, no. 37).

NATURE OF THE PROVINCE

197 *Inhabitants and languages.*—The Mayence language Mame and Náhuatl were the native languages of Xoconochco Province.

635 131 *Provincial borders in 1519.*—The province of Xoconochco was one of the terminals of the Empire, and doubtless warred constantly on the east and west. The links which bound Xoconochco Province to the Empire and to remote Tochtepec are not clearly known, but it seems likely that they consisted in isolated fortresses.

TRIBUTE

651 *Tribute of the whole province.*—The tribute of Xoconochco Province comprised the following:

CLOTHING[b]

[301] 2 lip plugs of light amber, gold setting
2 long strings of chalchiuites

FOOD[b]

[262] 200 loads of cacao

OTHER GOODS[b]

[237] 1,400 bunches of feathers, blue, red, and green
160 whole skins of birds[c]
800 handfuls of yellow parrot feathers
800 handfuls of quetzal feathers
[415] 40 ocelot skins
800 rich tecomates for drinking cacao
[31] 2 brick-sized chunks of clear amber

632 651 *Tribute of the component towns.*—Xoconochco gave, in the early colonial period, three annual tributes of goldpieces, each tribute being comprised of eight gold disks worth twenty-five pesos apiece.[d]

[a] Nuttall, "Chalchihuitl in Ancient Mexico," *American Anthropologist* (1901), 3: 232.
[b] Cooper Clark, ed., *Códice Mendocino* (1938), 1: 81, identifies it as *Cotinga amabilis* Gould.
[c] *PNE*, 1: No. 501: "Dan tres tributos cada ano y en cada vno ocho tejuelos de oro de a veynte e çinco pesos cada vno, de nueue quilates: pagando en tostones al Respeto."

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635 Teonochtitlan,[7] Teopantlan,[8] and Ytzucan.[9] Tezozomoc speaks of
175 Coatlalpan as being situated near the Marquesado.[10]

TRIBUTE

651 *Tribute of the whole province.*—Tepeacac and her subject towns paid the following tribute to the Empire:

FOOD

[262] 4 wooden cribs (2 of maize and 2 of beans)[11]

OTHER GOODS

317 4,000 loads of lime
314 4,000 loads of thick canes
281 8,000 loads of canes for arrow shafts
482 800 deerskins
8,000 loads of *acayetl* "performes que usan para la boca"
200 *cacaxtles*[12]

632 *Tribute of the component towns.*—Ahuatlan (a) paid a tribute of
651 cane.[13]

Coatzinco supplied cane, shields made of the same material, spearheads, bows and arrows, and white lime.[14]

[701] Texalucan (b) claimed to have given military service only—the enemies including the distant Coixca.[15]

Çoyatitlanapa (c) paid a tribute of canes, spearheads, white lime, shields made of cane, and wild cotton for padding armor.[16]

[7] More exactly, Tepexuxuma, next door to Teonochtitlan. *PNE*, 1: No. 540.
[8] *PNE*, 1: No. 559.
[9] *PNE*, 1: No. 292.
[10] Tezozomoc, *Crónica mexicana* (1878), pp. 533–534: "los pueblos de Coatla[l]pan y ... la tierra caliente, que ahora llaman del Marquesado."
[11] Wooden frames for carrying goods on the back with a tumpline.
[12] *PNE*, 5: 82–83: "Dicen que en tiempo de su ynfidelidad fueron vasallos de Motecçoma y sus pasados, y que le seruian y tributauan rrodelas de canas maçiças que en lengua mexicana llaman otlatl."
[13] *PNE*, 5: 95: "Dicen fueron vasallos de Motecçoma y de los Señores de Mexico, y le seruian con rrodelas de cana maçiça, con canas fuertes, y nausjas para lanças, cal blanca, flecha y arco para pelear."
[14] *PNE*, 5: 86: "Dizen que fueron vasallos de Motecçuma y sus pasados," making war against the "prouinçia de Coyxco y captiuauan gente que lleuavan a Mexico a Motecçuma para que se sacrificasse." For Coixca, see section on Tepequacuilco, p. 17, n. 41.
[15] *PNE*, 5: 90: "En tiempo de su ynfidelidad eran de Motecçuma, señor de Mexico, y sus pasados dauanle de tributo cal blanca, canas maçiças grandes, y nausjas para poner en las lanças, y rrodelas de cana maçiça para pelear, y algodon: algodon siluestre para jacos y cosseletes que vestian los hombres de guerra, que todo lo rreferido lleuauan a Mexico."

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which the above details are omitted, "yea, and they holde opinion that this skume or fatnesse of the water, is ye cause that such great number of foule cometh to the lake, which in the winter season is infinite."

Linné (1948), who considers that the substance was an alga that is no longer used, identifies it with the cakes that Bernal Diaz del Castillo saw being sold in the market at Tlatelolco, and which he described as having a cheeselike flavor (1928 edition, p. 300). It is not improbable that Diaz' cakes were made of corixid eggs, *ahuautli*, and it is conceivable that Sahagún's substance was also, though the reference to purple color makes it unlikely. If purple *Oscillatoria* or *Nostoc* were used as food at the time of Conquest, they are doubtless so used today, but the scene of the harvest may be expected to have shifted with the changing salinity of the Valley lakes and the decline of native salt manufacture.

The remaining invertebrates on Sahagún's list have drawn no attention from historians, and, possibly for that reason, they can be identified with some confidence. The *acocili* is clearly a crayfish, presumably *Cambarellus montezumae* (Saussure), and this is the modern Mexican name for that animal (DeBuen, 1944 a; Villalobos, 1943). Sahagún distinguishes it from the *camarón*, or shrimp (*Macrobrachium* or *Palaemon*), and discusses the latter in another part of the chapter, though without giving its Nahuatl name. Plate I, no. 219, leaves no doubt of the identification. In that figure it is accompanied by a dytiscid beetle larva, and this is presumably the *ocuiliztac*, which are "muy ligeros en el agua". Finally, the *anenezili*, which "turns into those bugs (*coquillos*) that have four wings and fly, and are called hawks (*gavilanes*) in Castile", is almost certainly a dragon-fly larva (Odonata). No. 222 in Plate I appears to represent the adult.

One point should not escape notice, in this melancholy record of confusion: four centuries of scholarship have not sufficed to bring limnologic knowledge of the Valley of Mexico up to the stage attained by the Aztecs and used by them in their daily lives.

CHEMISTRY. An inorganic product of the lakes that was also fully exploited was salt. Ethnographic data on saltmaking have been collected by Apenes (1944), and the importance of salt in aboriginal economy has been extensively discussed by Mendizábal (1929; reprinted in the *Obras Completas*, 1946). The latter author points out that evaporation by artificial heat is a practice introduced by the Aztecs and other high cultures of the highlands, and that the archaic method of solar evaporation survives in those areas less subject to Aztec domination. A standard feature of the more sophisticated method is the separation of silt by settling and filtration from the water to be evaporated, and today

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the salt is commonly extracted from soil of several types rather from the water itself. This practice would be expected to arise in a country of inland salines, not along the seacoast. Moreover, fractional evaporation is used to give different products, according to Apenes, the last of the liquors being the source of saltpeter. We cannot yet be sure that the whole complex is pre-Cortesian, but it suggests a knowledge of limnologic and soil chemistry among the Aztecs that was at least as great as their ceramic and metallurgic skill would imply.[4] The point is not only of considerable importance, but is capable of verification by chemical archaeology; that no attempt to do so has been made so far is another indication that the scientific knowledge of non-Western peoples exceeds in some respects that of the historians and ethnographers who study them.

Salt is one of the seldom-considered essentials of human welfare. Mendizábal makes the provocative point that if the Aztecs had been more generous with their salt, the Tlaxcalans (who had no salines in their domain) might not have been so ready to ally themselves with Cortés, and the course of history might have been rather different.

HYDROGRAPHY. The demonstration that the Aztecs had detailed knowledge of all aspects of their lakes that might be used for human sustenance is not itself a proof that they had a developed limnologic science. Far more primitive people have known and done as much, and none of the practices mentioned, with the possible exception of fractional evaporation of salt water, are beyond the capabilities of the Banyoro, for example, who live on Lake Albert in Africa (Worthington and Worthington, 1933). The urbanization of Tenochtitlán, however, brought problems in its train that simpler societies could hardly have faced. Lake *villages* are known all over the world, but lake cities are much less usual. In meeting these problems the Aztecs and their

[4] A piece of chemical knowledge that has been entirely overlooked is the manufacture of some salt from urine. Bernal Diaz del Castillo (1910 edition, p. 72) mentions the sale of "many canoes full of human excrement, and these were kept in the creeks near the market, and this they use for making salt or tanning skins, for without it they say that they cannot be well prepared". The reference to tanning of skins shows clearly that the excrement was urine and not feces, for the tanning properties of uric acid are still taken advantage of in modern Mexico; moreover, Bernal Diaz goes on to describe the collection of feces and their use as fertilizer. What "salt" other than uric acid or sodium chloride could have been extracted from urine is problematical; nitrates would have been the most valuable, and they could conceivably have been separated from the chlorides by fractional evaporation, as in the case of salt water. In the history of western chemistry the most important salt found in urine was microcosmic salt, $NH_4\ NaHPO_4 \cdot 2H_2O$, which served Brand as the source of phosphorus.

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648 Montezuma returned after this to talk about the matter with his Caciques, and in the presence of Cortés and our Captains and many of our soldiers, and of Pedro Hernández, Cortés's secretary, they gave their fealty to His Majesty, and they showed much emotion in doing so, and Montezuma could not keep back his tears. He was so dear to us and we were so much affected at seeing him weep, that our own eyes were softened and one soldier wept as much as Montezuma, such was the affection we had for him. I will leave off here, and say that Cortés and the Fraile de la Merced, who was very wise, were constantly in Montezuma's palace, trying to amuse him and to persuade him to give up his Idols.

Now I will go on.

NOTE ON CHAPTERS CII. AND CIII.

000 The description given by Bernal Díaz in Chapters CII. and CIII. of the expeditions sent in search of mines differs considerably from that given by Cortés in his second letter to the Emperor.

Cortés says that there were several expeditions. Bernal Díaz mentions only two—one under Gonzalo de Umbria, the other under Pizarro, neither of whom Cortés mentions by name.

316 Bernal Díaz quotes Monteruma as saying that gold was brought
● 317 from a province named Zacatula, which is on the south coast ten or twelve days' journey from the city, and that the gold was collected in gourds in which the earth was washed, and Bernal Díaz himself gives Zacatula as the name of the town visited by Gonzalo de Umbria. The only Zacatula shown on the maps is situated on the Rio de las Balsas in the State of Guerrero. Placer gold-mining is still carried on in this neighbourhood, and Montezuma may have mentioned the place as a source of gold supply. However, there is no proof that Gonzalo de Umbria visited the Rio de las Balsas, for Cortés says nothing about an expedition in that direction, and mentions only expeditions to Cuzula (Sosola?), Tamazulapa, Malinaltepec, Tenis (Tanetze), and Tuxtepec, all places in the north-western part of the present State of Oaxaca, and he confirms this later on in the same

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316 letter when he mentions Coastoaca (Coixtlahuaca) and Tamazula
317 (either Tamazola or Tamazulapa), which are in the same neighbourhood, as places visited during these expeditions.

685 The only slight corroboration of an expedition to Zacatula is the casual mention by Bernal Díaz of Matalzingo, which is near Toluca, and would be on the way to Zacatula, but the frequent repetition of the same names in different localities prevents much reliance being placed on it.

No definite information is given as to the routes by which the expeditions travelled.

The expedition under Pizarro probably travelled by way of Tehuacan or Orizaba to Malinaltepec on the upper waters of the Papaloapan River, where they would be within a short distance both of Tuxtepec and the land of the Chinantecs, and although Cortés is not very clear on the matter, there is no reason to suppose that all three places were not visited by members of the same expedition.

With regard to the expedition under Diego de Ordás in search of a good harbour, Cortés gives the additional information that the party went first to Vera Cruz and then marched all along the coast to Coatzacoalcos, examining in canoes the bays and the mouths of the rivers that were crossed.

CHAPTER CII.

How our Cortés endeavoured to find out about the Gold Mines, what was their value, and in what rivers they were found, and what harbours there were for ships between Panuco and Tabasco, especially about the great river at Coatzacoalcos, and what happened about it.

316 WHEN Cortés and the other Captains were with Montezuma
317 paying him court, among other things that he said through our interpreters Doña Marina and Jerónimo de Aguilar and Orteguilla, he asked Montezuma where the mines were, and in which rivers, and how and by what means they collected the gold which they brought him in grains, for he wished to send two of our soldiers who were expert miners to see it. Montezuma replied that there were three

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316 ● 317 places, but they usually brought most of the gold from a province named Zacatula, which is on the south coast ten or twelve days' journey from that city (Mexico). The gold was collected in xicales[1] by washing away the earth, so that after the earth was washed away some grains of gold remained. At the present time they also brought it to him from another province called Tustepec near where we disembarked on the north coast where it was gathered from two rivers. Near that province there were other good mines in a land that was not subject to him, named the land of the Chinantecs and 000 Zapotecs, who did not obey his rule. If Cortés wished to send his soldiers he would give them Chieftains to go with them. Cortés thanked him for it, and at once despatched a pilot named Gonzalo de Umbria, with two other soldiers who were miners to the mines of Zacatula. This Gonzalo de Umbria was the man whose feet Cortés had ordered to be cut off when he hanged Pedro Escudero and Juan Cermeño[2] and flogged the Peñates for their attempt to carry off a ship at San Juan de Ulua, as I have written down more at length in the chapter which deals with the incident.

Let us stop talking about the past and say how they set out with Umbria, a limit of forty days being allowed them in which to go and return.

To examine the mines on the north coast Cortés sent a captain named Pizarro, a young man about twenty years old, whom he treated as a relation. At that time there was no mention of Peru, nor were the Pizarros talked about in these lands. Pizarro set out with four oldiers, and he also was given forty days in which to go and return, for the distance was about eighty leagues from Mexico, and four Mexican chieftains accompanied him.

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[1] gourds [2] See note on page 207, vol. i.

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000 Ircio went to settle at Panuco. As I am already tired of noting the things in which this historian goes outside of what really happened, I will stop speaking of it, and will relate what each of the Captains sent by Cortés, accomplished, and will report how each returned with samples of gold.

CHAPTER CIII.

How the Captains returned whom our Cortés had sent to examine the mines, and take soundings of the harbour and river of Coatzacoalcos.

316 THE first to return to the City of Mexico and to give an
317 account of what Cortés had sent him to do was Gonzalo de
648 Umbria and his companions, who brought a matter of three hundred pesos in grains which the Indians of a town named Zacatula had extracted before their eyes. According to Umbria's description, the Caciques of that province took many Indians to the rivers, and in vessels like small troughs they washed the earth and collected the gold. The gold came from two rivers, and they said that if good miners went and washed the earth as they did in the Island of Santo Domingo or the Island of Cuba, that these would prove to be rich mines. Umbria also brought with him two chieftains sent by the province, and they brought a present of gold made into jewels worth about two hundred pesos, and gave and offered themselves as servants of His Majesty, and Cortés was as pleased with this gold as though it were thirty thousand pesos, for he now knew for certain that there were good mines, and he showed much affection to the chieftains who brought the present and ordered them to be given some green beads from Castile, and after friendly speeches they returned to their country well contented.

11:Diaz T,H-5 (1519-1520) 1910
NU7 Aztec NU7

Let us leave Ordás And speak of Captain Pizarro And 316
his companions who went in the direction of Tustepec to look for gold and examine the mines. Pizarro returned to make his report to Cortés accompanied by one soldier only, and he brought with him over one thousand pesos in grains of gold taken from the mines, and said that in the province of Tustepec and Malinaltepec and other neighbouring districts, he went to the rivers accompanied by many people who were sent with him, and they gathered a third part of the gold that he had brought, and they went high up in the hills to another province, that of the Chinantecs, and that when they reached their land, many Indians came out to meet them with arms, which were lances, much better than those we had, and bows and arrows and shields, and they said that not a single Mexican should enter their country, for they would kill them, but that the Teules should pass in and be welcome; so they went on, and the Mexicans were left behind and did not go any further. As soon as the Caciques of Chinanta understood what they had come for, they got together a large number of their people to wash for gold, and they took them to some rivers where they collected the rest of the gold which he had brought in twisted grains, and the miners said those were the most lasting mines as the gold was formed there. Captain 648
Pizarro also brought two Caciques from that country who came to offer themselves as vassals to His Majesty, and to secure our friendship they even brought a present of gold. One and all of those chieftains said many evil things of the Mexicans, who were so greatly hated in those provinces for the robberies they committed that they [the Chinantecs] could not bear the sight of them or the mention of their names.

Cortés received Pizarro and the chieftains whom he brought with cordiality, and he accepted the present which they gave him, (as it was so many years ago I cannot

13: Phillips U-4 (no date) 1925
NU7 Aztec NU7

THE METAL INDUSTRY OF THE AZTECS

By GEORGE BRINTON PHILLIPS

I

121 325 THE collections of many thousand copper objects, tools, weapons, and ornaments from ancient Indian burial mounds and village sites in the Unites States of North America is strong evidence in favor of a pre-Columbian copper industry with which the aborigines were familiar before they reached the Iron Age. Did this knowledge and use of copper extend into Mexico and adjacent country of Central America?

325 Prescott in his *Conquest of Mexico* gives a picturesque account of the splendors of the court of the Montezumas with its silver and gold ornaments and utensils, but the knowledge of metals does not seem to have extended to the general use of copper or bronze for tools and weapons. The Aztec in the production of ornaments in the precious metal showed great skill and artistic workmanship and specimens sent over to Spain were greatly admired by the Spanish goldsmiths. Owing to scarcity of copper [412] in their immediate vicinity, the ancient Mexicans confined its use to adze blades, chisels and some copper objects, possibly ceremonial implements. The tools were hardened by hammering and used in wood carving. The stone cutting it is believed was still done with flint tools.

● 317 325 Copper was obtained from the mines of Zocotallan where it occurred in masses on the surface and also from the galleries opened in the rock. Ancient workings have been discovered at Cerro del Aguilar in Guerrero, and the Zapotec country was well known for its copper mines. Deposits of tin were also found in Guerrero at the mines of Tasco, and it is said that Cortez obtained enough tin from that source with the copper to cast several large cannon, which he used in his fortress at the siege of Mexico. This use of tin in making a suitable alloy it is believed was due to the familiarity the Spaniards had of bronze, rather than to Aztec knowledge of the art.

13: Phillips U-4 (no date) 1925
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325 copper ore. A chisel reported in the "Anales del Museo de Mexico" quoted by Sir John Evans, in his *Ancient Mexican Implements* when analyzed gave copper 97.87%, tin 2.13%, not sufficient to make a true bronze. Copper axes from Oaxaca, some heavy metal, apparently cast in a mould, others thin, shaped from sheet copper, have been analyzed and yielded only copper, showing they were *not* bronze.

A recent analysis was made for the writer of a portion of a metal chisel of Aztec origin from the village of Acatlán, in the State of Guerrero, Mexico. It was doubtless authentic being sent by Dr. Manuel Gamio, Direccion Anthropologia, Mexico, for analysis, which was made by Dr. D. L. Wallace of the University of Pennsylvania, Analytical Department. The piece of metal apparently broken from the middle of the chisel weighed 88 gms. It was 30 mm. long, 20 mm. wide and 15 mm. thick. It had a brown patina of oxidation, gave clean metal borings (used in the analysis) of dark red bronze color, and had the appearance of having been cast in an open mould. The specific gravity of the metal was 8.00 compared with Lake Superior native copper 7.50. The analyses yielded results as follows:

Copper	91.40%
Tin	3.07%
Lead	0.82%
Iron	0.53%
Cobalt	0.09%
Sulphur	0.82%
	96.73%
Thallium	?

Other metals often associated with Copper were tested for and not found, but tests indicated Thallium. This element Thallium occurs in some copper ores in Mexico as the mineral Crookesite, a copper Thallium selenite sulphide; and it is believed the portion unaccounted for in the analysis was due to the Thallium. [317]

325 301 The little copper bells in the Museum collections seem to have been found in Mexican sites as well as in Central America, and are quite abundant in some localities. Some of these bells were about one half to three-quarters of an inch long, others of more than two inches and of different shape.